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SIMPLOT PLANT AREA – EASTERN MICHAUD FLATS SUPERFUND SITE

I. History of The Design of the Groundwater Extraction System

- Following the Remedial Investigation/Feasibility Study, EPA released:

  ⇒ a proposed cleanup plan for public comment in April 1997; and

  ⇒ a Record of Decision (ROD), specifying the selected remedial actions for the Site in June 1998.

- In 1997 and 1998, Simplot initiated design discussions with EPA and voluntarily performed field-work to support remedial design of the groundwater extraction system. This work included additional investigation and long-term testing of extraction wells.

- After the ROD and before the Consent Decree Simplot continued discussions with EPA regarding remedial design. Simplot requested that the remedial design documents be incorporated into the Statement of Work for the anticipated Consent Decree.

- EPA notified Simplot in late August 1998 that they wanted to have a Consent Decree in place by the end of September 1998. Simplot worked with EPA to achieve this goal and Simplot signed the Consent Decree in September 1998. The Off-Plant Area was to be addressed by incorporating identical remedial actions into both the Simplot Operable Unit (OU) and FMC OU.

- After the Consent Decree was signed, the Tribes objected that it had not been given adequate opportunity to participate in the negotiations. EPA deferred to the Tribes' wishes and withdrew the government's support for the Consent Decree. EPA then ordered the companies to re-negotiate the Consent Decrees to address the Tribal concerns. Simplot agreed. Thus began a period of re-negotiation that continued from approximately December 1998 to May 1999 and included nine separate versions of the second Consent Decree. None of the revisions pertained to actions to be performed by Simplot on its property. Finally, Simplot, FMC and DOJ signed revised Consent Decrees and filed them with the Court on July 21, 1999.

- The Tribes again objected. Significantly, almost all of the Tribes' objections were directed towards the FMC OU and the off-plant impacts caused by FMC. Many of the Tribes' objections were the same as previously considered by EPA, and the remaining objections did not address the Simplot Plant Area. In June 2000, the government called Simplot's lawyers to tell them that the government would not sign the second version of the Consent Decree, due to commitments made by EPA to the Tribes in negotiations Simplot was not invited to.

- During the negotiation of that Consent Decree, the Total Maximum Daily Load (TMDL) issue for the Portneuf River came into focus and in July 2000 Simplot participated in a meeting with the then EPA Project Manager, Wallace Reid, and EPA's acting regional administrator, Chuck Findlay, to discuss the Superfund remedy as it related to the overall extraction system performance and the TMDL program and goals.

– resulted in covenant for orthophos

– no disagreement re what is in CD & ROD.

- The third Consent Decree was modified based on that meeting, and signed by Simplot in August 2001. This Consent Decree between EPA and Simplot was lodged with the court in October 2001 and entered in May 2002.

- Simplot is currently performing additional field work to support design of the extraction system that is not required under the Consent Decree and has added work based on concerns raised by EPA at a meeting in mid-October 2002.

- Portions of the test system continue to operate today and have extracted approximately 100 million gallons of groundwater affected by the gypsum stack. Simplot has also continued to sample groundwater voluntarily on a semi-annual basis, which has allowed increased understanding of the groundwater system.

II. Simplot's Rationale/Proposed Approach for the Groundwater Extraction System

- The draft Groundwater Extraction System Remedial Design Report (30% design), provided in early August, is consistent with the remedy described in the Record of Decision and will meet the remedial action objectives and associated numerical performance standards set out in the Consent Decree Statement of Work and provide benefit for the TMDL process Simplot is currently engaged in with IDEQ (Simplot is also in discussions with IDEQ on the TMDL). The field work and design analyses performed to date have:

    ⇒ resolved the basic physical hydrogeology to support preliminary design (this understanding has been augmented by the voluntary pilot testing and ongoing groundwater monitoring);

    ⇒ identified additional investigation work needed in support of field-ready design; and

    ⇒ recognized that given localized geology a substantial amount of additional modeling beyond that already planned would not be as effective as installing the system and monitoring with regard to fine tuning system performance.

- The technical balance provided in the draft design is to meet performance standards by containing the majority of groundwater affected by gypsum stack seepage without excessive extraction of cleaner groundwater that cannot be incorporated into the Don Plant water balance due to its high dissolved solids content.

- The design document reflects Simplot's overall philosophy for the groundwater extraction system, which is to efficiently complete the design and get the system up and running and identify modifications needed to protect human health and the environment through the on-going groundwater monitoring program.

~~want to extract~~ limited # of places can use dirty water

? If expand system will be extracting cleaner water

meeting MCL b/y at old MCL standard.

III. Cost Benefit Analysis of a System Designed to Achieve 100% Containment of Groundwater Affected by the Gypsum Stack

- The groundwater extraction system described in the Record of Decision and Consent Decree Statement of Work is required to meet provide overall protection of human health and the environment by reducing concentrations of COCs in groundwater discharging to the Portneuf River to below MCLs or RBCs. The system will also improve groundwater quality within the plant area (Note: human health has been protected by Institutional Controls to prevent use as drinking water).

Cost ROD $1.1 million

- Extracted groundwater must be recycled into the Don Plant process. The remedy evaluated in the Feasibility Study and described in the Record of Decision always acknowledged the balance between the rate of extraction and the ability of the Don Plant to accommodate the water (e.g. 750 gallon per minute) with regards to meeting objectives.

well

Costs Associated with 100% Containment System

inner aquifer polishing step — sufficient treatment for boiler feed. to be used in any point in plant.

- Simplot's current evaluation of the Don Plant water balance indicates that the design flow rate of extracted groundwater (830 gallons per minute sustained flow, 750 gallons per minute annual average) can be reused in the Don Plant without treatment. However, this appears to be the limit of the available capacity without treatment to reduce solids content.

- The estimated present value cost estimate from the Record of Decision for the extraction system was $1.1 million (approximately $650,000 capital and $30,000 annual operating, using a 30-year time period).

- Implementation of a system to hydraulically control all groundwater impacted by the gypsum stack would entail extraction of a larger flow rate of groundwater with lower constituent concentrations at a much higher cost (the inefficiencies associated with capturing the last few percent of affected groundwater result in escalating costs).

  ⇒ It is not possible to define the extraction rate that would be required. However, as an example, it is assumed that the total flow would be double the rate estimated in the draft remedial design report (1,500 gallons per minute average).

⇒ Based on initial design evaluations, Simplot obtained a bid to treat the extracted groundwater from an independent water treatment company for treating 750 gallons a minute of extracted groundwater (lime treatment followed by reverse osmosis) of $3 million capital and $3 million per year operation and maintenance.

⇒ The system would generate a waste stream with high solids content at approximately 200 gallons per minute. The annual operating cost estimate did not include management of the waste stream and so the $3 million estimate would likely be lower than actual.

⇒ For a system to hydraulically control all groundwater impacted by the gypsum stack, extracting 1,500 gpm and treating 750 gpm, the present worth cost is estimated at approximately $61 million (excluding costs to handle the high-solids waste discharge stream, which could be significant).

Benefit of the System to Hydraulically Control all Groundwater Impacted by the Gypsum Stack

- The Consent Decree Statement of Work sets the performance standard for arsenic in groundwater discharging to the Portneuf River to protect human health and the environment at the MCL, 10 ppb.

- In the last two years, 11 samples have been collected from the groundwater discharges (springs) to the river. Arsenic concentrations in these samples ranged from 4 to 20 ppb with an average of 8 ppb.

- An analysis of background concentrations (i.e., unaffected by site sources) of constituents in groundwater (from the Remedial Investigation Report and subsequent data) estimated that the upper 95 percent confidence limit on the mean background arsenic concentrations near the Portneuf River is 9 ppb and the 95% tolerance limit on the dataset is 16 ppb (i.e., 95% of the background dataset observations should fall below 16 ppb). Therefore the performance standard falls within the range of background concentrations for arsenic. It is noted that background arsenic concentrations in groundwater in the Bannock range are higher than near the Portneuf River.

- Based on these existing conditions, the difference in water quality at the river from a system to hydraulically control all groundwater impacted by the gypsum stack compared to the system proposed in the 30% design report would not be measurable.

based on what?

- Another line of evidence that the proposed extraction system will provide significant control relates to the monitoring in the Portneuf River performed by IDEQ to support the TMDL.

    ⇒ The IDEQ monitoring included detailed sampling and flow measurement in the river in the area of groundwater discharge from the EMF facilities. The IDEQ investigation (report not yet published) is reported to have estimated that orthophosphate loads in the river attributable to EMF groundwater discharge were 1,451 pounds per day in September 2000 and 1,234 pounds per day in August 2001.

    ⇒ Using the estimated extraction rates and the orthophosphate concentrations measured in groundwater in the vicinity of the proposed wells during the similar time frame, the estimate of the orthophosphate removal rate from groundwater was 1,400 to 1,700 pounds per day; similar to range of loading to the river measured by IDEQ.